

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Commissioner
 US Department of Commerce
 United States Patent and Trademark
 Office, PCT
 2011 South Clark Place Room
 CP2/5C24
 Arlington, VA 22202
 ETATS-UNIS D'AMERIQUE
 in its capacity as elected Office

Date of mailing (day/month/year) 13 February 2001 (13.02.01)	Applicant's or agent's file reference WO 800142-VB
International application No. PCT/NL00/00371	Priority date (day/month/year) 31 May 1999 (31.05.99)
International filing date (day/month/year) 30 May 2000 (30.05.00)	
Applicant VELLEKOOP, Michael, Johannes et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:

28 December 2000 (28.12.00)

☐ in a notice effecting later election filed with the International Bureau on:2. The election ☒ was☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer Zakaria EL KHODARY Telephone No.: (41-22) 338.83.38
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A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G01F23/26

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G01F B01L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 98 03841 A (SCEPTER SCIENT INC) 29 January 1998 (1998-01-29) page 3, line 3 -page 4, line 8; figures 1-3	1-11
A	WO 96 24030 A (ABBOTT LAB) 8 August 1996 (1996-08-08) cited in the application page 5, line 29 -page 15, line 27; figures 1-8	1-11
A	US 5 863 708 A (CHERUKURI SATYAM CHOUDARY ET AL) 26 January 1999 (1999-01-26) column 7, line 37 -column 8, line 26; figure 4	1
-/-		



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

*** Special categories of cited documents :**

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *&* document member of the same patent family

Date of the actual completion of the international search

6 September 2000

Date of mailing of the international search report

14/09/2000

Name and mailing address of the ISA
European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Heinsius, R

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE 196 46 505 A (ITT IND GMBH DEUTSCHE) 14 May 1998 (1998-05-14) column 4, line 27 -column 5, line 7; figure 1	1
A	EP 0 819 942 A (BOEHRINGER MANNHEIM GMBH ;HITACHI LTD (JP)) 21 January 1998 (1998-01-21) column 9, line 42 -column 10, line 53; figures 3,4	1

INTERNATIONAL SEARCH REPORT

Information on patent family members

Int. Application No

PCT/NL 00/00371

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9803841 A	29-01-1998	US 5765434 A	16-06-1998
WO 9624030 A	08-08-1996	CA 2211355 A	08-08-1996
		EP 0807244 A	19-11-1997
		JP 11500217 T	06-01-1999
US 5863708 A	26-01-1999	US 5585069 A	17-12-1996
		AU 705351 B	20-05-1999
		AU 4152396 A	06-06-1996
		AU 705659 B	27-05-1999
		AU 4233796 A	06-06-1996
		CA 2204912 A	23-05-1996
		CA 2205066 A	23-05-1996
		EP 0791238 A	27-08-1997
		EP 0808456 A	26-11-1997
		JP 11500602 T	19-01-1999
		WO 9615450 A	23-05-1996
		WO 9615576 A	23-05-1996
		US 5681484 A	28-10-1997
		US 5643738 A	01-07-1997
		US 5593838 A	14-01-1997
		US 5846396 A	08-12-1998
		US 5985119 A	16-11-1999
		US 5755942 A	26-05-1998
		US 5858804 A	12-01-1999
DE 19646505 A	14-05-1998	WO 9820974 A	22-05-1998
		EP 0938383 A	01-09-1999
EP 0819942 A	21-01-1998	JP 10038899 A	13-02-1998
		US 5855851 A	05-01-1999

PATENT COOPERATION TREATY

VB

From the INTERNATIONAL SEARCHING AUTHORITY

PCT

NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL SEARCH REPORT
OR THE DECLARATION

(PCT Rule 44.1)

To: OCTROOIBUREAU LOS EN STIGTER B.V. Attn. VAN BREDA, J. Weteringschans 96 NL-1017 XS Amsterdam NETHERLANDS	
Map. WO 800142	Ingek. 12 SEP. 2000 14.11.2000 9.10.00

Date of mailing (day/month/year)	14/09/2000
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Applicant's or agent's file reference (30.11.2001) WO 800142-VB
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FOR FURTHER ACTION See paragraphs 1 and 4 below

International application No. PCT/NL 00/ 00371

International filing date (day/month/year)	30/05/2000
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Applicant TECHNISCHE UNIVERSITEIT DELFT
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1. <input checked="" type="checkbox"/>	<p>The applicant is hereby notified that the International Search Report has been established and is transmitted herewith.</p> <p>Filing of amendments and statement under Article 19: The applicant is entitled, if he so wishes, to amend the claims of the International Application (see Rule 46):</p> <p>When? The time limit for filing such amendments is normally 2 months from the date of transmittal of the International Search Report; however, for more details, see the notes on the accompanying sheet.</p> <p>Where? Directly to the International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35</p> <p>For more detailed instructions, see the notes on the accompanying sheet.</p>
2. <input type="checkbox"/>	<p>The applicant is hereby notified that no International Search Report will be established and that the declaration under Article 17(2)(a) to that effect is transmitted herewith.</p>
3. <input type="checkbox"/>	<p>With regard to the protest against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:</p> <p><input type="checkbox"/> the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.</p> <p><input type="checkbox"/> no decision has been made yet on the protest: the applicant will be notified as soon as a decision is made.</p>
4. Further action(s):	<p>The applicant is reminded of the following:</p> <p>Shortly after 18 months from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90bis.1 and 90bis.3, respectively, before the completion of the technical preparations for international publication.</p> <p>Within 19 months from the priority date, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later).</p> <p>Within 20 months from the priority date, the applicant must perform the prescribed acts for entry into the national phase before all designated Offices which have not been elected in the demand or in a later election within 19 months from the priority date or could not be elected because they are not bound by Chapter II.</p>

Name and mailing address of the International Searching Authority <div style="text-align: center;"> </div> European Patent Office, P.B., 5818 Patentlaan 2 NL-2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer Jeanne Bauer
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NOTES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the PCT Applicant's Guide, a publication of WIPO.

In these Notes, "Article", "Rule", and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions respectively.

INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims, description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only.

What parts of the international application may be amended?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

When?

Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

Where not to file the amendments?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

How?

Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differs from the sheet originally filed.

All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Administrative Instructions, Section 205(b)).

The amendments must be made in the language in which the international application is to be published.

What documents must/may accompany the amendments?

Letter (Section 205(b)):

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.

NOTES TO FORM PCT/ISA/220 (continued)

The letter must indicate the differences between the claims as filed and the claims as amended. It must, in particular, indicate, in connection with each claim appearing in the international application (it being understood that identical indications concerning several claims may be grouped), whether

- (i) the claim is unchanged;
- (ii) the claim is cancelled;
- (iii) the claim is new;
- (iv) the claim replaces one or more claims as filed;
- (v) the claim is the result of the division of a claim as filed.

The following examples illustrate the manner in which amendments must be explained in the accompanying letter:

1. [Where originally there were 48 claims and after amendment of some claims there are 51]:
"Claims 1 to 29, 31, 32, 34, 35, 37 to 48 replaced by amended claims bearing the same numbers; claims 30, 33 and 36 unchanged; new claims 49 to 51 added."
2. [Where originally there were 15 claims and after amendment of all claims there are 11]:
"Claims 1 to 15 replaced by amended claims 1 to 11."
3. [Where originally there were 14 claims and the amendments consist in cancelling some claims and in adding new claims]:
"Claims 1 to 6 and 14 unchanged; claims 7 to 13 cancelled; new claims 15, 16 and 17 added." or
"Claims 7 to 13 cancelled; new claims 15, 16 and 17 added; all other claims unchanged."
4. [Where various kinds of amendments are made]:
"Claims 1-10 unchanged; claims 11 to 13, 18 and 19 cancelled; claims 14, 15 and 16 replaced by amended claim 14; claim 17 subdivided into amended claims 15, 16 and 17; new claims 20 and 21 added."

"Statement under article 19(1)" (Rule 46.4)

The amendments may be accompanied by a statement explaining the amendments and indicating any impact that such amendments might have on the description and the drawings (which cannot be amended under Article 19(1)).

The statement will be published with the international application and the amended claims.

It must be in the language in which the international application is to be published.

It must be brief, not exceeding 500 words if in English or if translated into English.

It should not be confused with and does not replace the letter indicating the differences between the claims as filed and as amended. It must be filed on a separate sheet and must be identified as such by a heading, preferably by using the words "Statement under Article 19(1)."

It may not contain any disparaging comments on the international search report or the relevance of citations contained in that report. Reference to citations, relevant to a given claim, contained in the international search report may be made only in connection with an amendment of that claim.

Consequence if a demand for international preliminary examination has already been filed

If, at the time of filing any amendments under Article 19, a demand for international preliminary examination has already been submitted, the applicant must preferably, at the same time of filing the amendments with the International Bureau, also file a copy of such amendments with the International Preliminary Examining Authority (see Rule 62.2(a), first sentence).

Consequence with regard to translation of the international application for entry into the national phase

The applicant's attention is drawn to the fact that, where upon entry into the national phase, a translation of the claims as amended under Article 19 may have to be furnished to the designated/elected Offices, instead of, or in addition to, the translation of the claims as filed.

For further details on the requirements of each designated/elected Office, see Volume II of the PCT Applicant's Guide

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference WO 800142-VB	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/NL 00/ 00371	International filing date (day/month/year) 30/05/2000	(Earliest) Priority Date (day/month/year) 31/05/1999
Applicant TECHNISCHE UNIVERSITEIT DELFT		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).
- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :
- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

- ☒ the text is approved as submitted by the applicant.
- ☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

- ☒ the text is approved as submitted by the applicant.
- ☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

- ☒ as suggested by the applicant.
- ☐ because the applicant failed to suggest a figure.
- ☐ because this figure better characterizes the invention.

1

☐ None of the figures.

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 G01F23/

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G01F B01L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 98 03841 A (SCEPTER SCIENT INC) 29 January 1998 (1998-01-29) page 3, line 3 -page 4, line 8; figures 1-3	1-11
A	WO 96 24030 A (ABBOTT LAB) 8 August 1996 (1996-08-08) cited in the application page 5, line 29 -page 15, line 27; figures 1-8	1-11
A	US 5.863.708 A (CHERUKURI SATYAM CHOUDARY ET AL) 26 January 1999 (1999-01-26) column 7, line 37 -column 8, line 26; figure 4	1

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.*** Special categories of cited documents:**

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

Z document member of the same patent family

Date of the actual completion of the international search

6 September 2000

Date of mailing of the international search report

14/09/2000

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Heinsius, R

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of documents with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE 196 46 505 A (ITT IND GMBH DEUTSCHE) 14 May 1998 (1998-05-14) column 4, line 27 -column 5, line 7; figure 1 ---	1
A	EP 0 819 942 A (BOEHRINGER MANNHEIM GMBH ;HITACHI LTD (JP)) 21 January 1998 (1998-01-21) column 9, line 42 -column 10, line 53; figures 3,4 -----	1

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/NL 00/00371

Patent document cited in search report		Publication date	Patent family member		Publication date
WO 9803841	A	29-01-1998	US	5765434 A	16-06-1998
WO 9624030	A	08-08-1996	CA	2211355 A	08-08-1996
			EP	0807244 A	19-11-1997
			JP	11500217 T	06-01-1999
US 5863708	A	26-01-1999	US	5585069 A	17-12-1996
			AU	705351 B	20-05-1999
			AU	4152396 A	06-06-1996
			AU	705659 B	27-05-1999
			AU	4233796 A	06-06-1996
			CA	2204912 A	23-05-1996
			CA	2205066 A	23-05-1996
			EP	0791238 A	27-08-1997
			EP	0808456 A	26-11-1997
			JP	11500602 T	19-01-1999
			WO	9615450 A	23-05-1996
			WO	9615576 A	23-05-1996
			US	5681484 A	28-10-1997
			US	5643738 A	01-07-1997
			US	5593838 A	14-01-1997
			US	5846396 A	08-12-1998
			US	5985119 A	16-11-1999
			US	5755942 A	26-05-1998
			US	5858804 A	12-01-1999
DE 19646505	A	14-05-1998	WO	9820974 A	22-05-1998
			EP	0938383 A	01-09-1999
EP 0819942	A	21-01-1998	JP	10038899 A	13-02-1998
			US	5855851 A	05-01-1999

REC'D 04 SEP 2001

WIPO PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

14



Applicant's or agent's file reference WO 800142-VB		FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/NL00/00371	International filing date (day/month/year) 30/05/2000	Priority date (day/month/year) 31/05/1999	
International Patent Classification (IPC) or national classification and IPC G01F23/26			
Applicant TECHNISCHE UNIVERSITEIT DELFT et al.			

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 8 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

 These annexes consist of a total of 3 sheets.

3. This report contains indications relating to the following items:
 - I ☒ Basis of the report
 - II ☐ Priority
 - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - IV ☐ Lack of unity of invention
 - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - VI ☐ Certain documents cited
 - VII ☐ Certain defects in the international application
 - VIII ☒ Certain observations on the international application

Date of submission of the demand 28/12/2000	Date of completion of this report 31.08.2001
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Bravin, M Telephone No. +49 89 2399 2417 

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/NL00/00371

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, pages:

2-6 as originally filed

1 as received on 09/08/2001 with letter of 06/08/2001

Claims, No.:

1-11 as received on 09/08/2001 with letter of 06/08/2001

Drawings, sheets:

1/1 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/NL00/00371

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

5. ☒ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

see separate sheet

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	2-11
	No:	Claims	1
Inventive step (IS)	Yes:	Claims	9
	No:	Claims	1-8, 11
Industrial applicability (IA)	Yes:	Claims	1-11
	No:	Claims	

2. Citations and explanations

see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/NL00/00371

Re Item I

Basis of the report

An amendment filed with the letter dated 6 Aug. 2001 introduces subject matter which extends beyond the content of the application as filed, contrary to Art. 34(2)(b) PCT. The amendment concerned is the following :

omission of the term "small" in the expression "small quantity of a liquid" according to claim 1 as filed. Although said term is relative and the description is needed for its interpretation, its omission leads to a generalisation that is not admissible in view of the alleged invention (see description, p. 1, line 1 to p. 2, line 9, and p. 5, lines 25-35).

Said amendment has therefore not been taken into consideration.

Re Item V

Reasoned statement under Art. 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1.

Reference is made to the following documents :

- D1: US 4 225 410 A (PACE) 30 September 1980 (1980-09-30)
- D2: WO 96 24030 A (ABBOTT LAB) 8 August 1996 (1996-08-08) cited in the application
- D3: DE 196 46 505 A (ITT IND GMBH DEUTSCHE) 14 May 1998 (1998-05-14)
- D4: WO 98 03841 A (SCEPTER SCIENT INC) 29 January 1998 (1998-01-29) cited in the application
- D5: US-A-5 863 708 (CHERUKURI SATYAM CHOUDARY ET AL) 26 January 1999 (1999-01-26)

(Document D1 was not cited in the international search report).

2.

The subject matter of claim 1 is not new (Art. 33(2) PCT) :

Document D2 discloses the subject matter of claim 1 :

An apparatus (see Fig. 1, D2) for measuring a volume of a small quantity of a liquid (see Abstract and p. 15, lines 19-27, D2) comprising at least one chamber (30, Fig. 4, D2) for receiving the liquid, which chamber comprises a bottom and upright side walls (see Fig. 1, D2) and at least two electrodes (connecting electrodes 54, 56, Fig. 4, D2 - see also p. 7, lines 14-33, D2) suitable for connecting to a voltage source and a measuring system according to claim 1 (see p. 9, lines 26-35 and Fig. 7, D2), whereby the electrodes are incorporated in the bottom of the chamber (see Fig. 4, D2), allowing the electrical impedance of the liquid its to be determined (the level-dependent capacitance of the liquid is measured in D2).

It follows that claim 1 does not meet the requirements of Art. 33(2) PCT in respect of novelty.

3.

An interpretation of claim 1 based on the description, that is, an apparatus comprising the particular electrode arrangement displayed on Fig. 1-2, would not lead to the conclusion that claim 1 involves an inventive step (Art. 33(3) PCT). The reasons are as follows :

The apparatus according to D2 allows verifying the volume of a quantity of liquid contained in a chamber, using two measuring electrodes (44, 46, Fig. 4, D2) comprised within the walls of the chamber. A skilled person will understand from D2 that, for this purpose, the height-dependent capacitance of the liquid between the two electrodes is measured and the volume of the liquid contained in the chamber is derived from its height, knowing the base surface area of the chamber.

The apparatus described in the application differs from D2 in that a different electrode arrangement is used (measuring electrodes fully incorporated in the bottom of the chamber).

The electrode arrangement proposed in the application is known from D4 (see Fig. 1, D4) and used, according to that document, to determine the height of a liquid through height-dependent capacitance measurements (see Abstract and p. 2, lines 10-17, D4), the liquid, however, not being confined within a chamber (see p. 1, lines 4-10, D4).

It is obvious to the skilled person that the electrode arrangement of D4 would also serve its purpose if the liquid were contained in a chamber. In effect, the main contribution to the measured capacitance in D4 comes from electric field lines traversing the liquid directly above and between the electrodes, since the field intensity is larger in that region. The skilled person would thus not expect that outside insulating wall chambers would affect the field distribution in such a way as to make the height measurements impossible.

In other words, there is no technical prejudice against using the electrode arrangement according to D4 to determine the height of a liquid contained in a chamber. The skilled person would therefore regard the electrode arrangement of D4 as an obvious alternative to the electrode arrangement of D2 and would, according to circumstances, implement it in a chamber according to D2. By so doing, he would arrive at a device according to the application, without an inventive step being involved.

4.

Dependent claims 2-8 and 10-11 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of inventive step (Art. 33(3) PCT), the reasons being as follows :

Claims 2-8, 10 relate to materials and structures usual in semiconductor fabrication technology, which technology is obvious in the context set forth in the application (miniaturized medical diagnostic test apparatuses) - see e.g. D1, D3, D5.

Claim 11 defines an additional voltage source with an operating frequency range allowing to bring down the value of an impedance in a favorable range for measurement (see description, p. 4, lines 10-18). The subject matter of claim 11 is obvious for a skilled person, especially in view of p. 4, line 25 to p. 5, line 1 of D4, where similar measurements as in the application are performed, with a similar electrode arrangement.

5.

The subject matter of claim 9 would appear to meet the requirements of Art. 33 PCT in respect of novelty and inventive step :

From the description (p.1, line 28 to p. 2, line 20; p. 5, lines 30-35 and Fig. 1-2), it is possible to conclude that the type of dual electrode arrangement known from D4, applied to a chamber known from D2, would allow miniaturization of the same to such an extent that a volume of liquid smaller by five orders of magnitude compared to that typically used in D2 would become measurable. This technical effect would not appear to be derivable from the prior art. The corresponding feature of claim 9, that is, a chamber volume of maximally 2 nanoliters, as appended to claim 1, is therefore not obvious.

Re Item VIII

Certain observations on the international application

Claim 1 does not meet the requirements of Art. 6 PCT :

Lack of clarity :

The term "small" in claim 1 as filed (see Re Item I of present report), being relative, has no precise meaning by itself in the present context.

Lack of support by the description :

1.

The formulation "*whereby the electrodes are incorporated in the bottom of the chamber*" is too vague, in that it does not permit to distinguish unambiguously the subject matter of claim 1 from D2 (see Re Item V of present report, paragraph 2). D2 however discloses a different electrode arrangement as the one described in the application. Claim 1 is thus not supported by the description as required by Article 6 PCT, as its scope is broader than justified by the description and drawings.

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2.

It can be derived from the description that the electrode arrangement as described in the application does not allow the measurement of any type of impedance (in particular, it does not allow the measurement of a pure resistance since the electrodes are isolated from the sample - see p. 3, lines 27-33, p. 5, line 37 to p. 6, line 2 and Fig. 1-2). Claim 1 is therefore not supported by the description as required by Art. 6 PCT, as its scope is broader than justified by the description and drawings.

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference WO 800142-VB	FOR FURTHER ACTION		see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 b. low.
International application No. PCT/NL 00/ 00371	International filing date (day/month/year) 30/05/2000	(Earliest) Priority Date (day/month/year) 31/05/1999	
Applicant TECHNISCHE UNIVERSITEIT DELFT			

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.
☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of Invention is lacking** (see Box II).

4. With regard to the title,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the abstract,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

1

☐ None of the figures.

INTERNATIONAL SEARCH REPORT

International Application No

PC 00/00371

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G01F23/26

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHEDMinimum documentation searched (classification system followed by classification symbols)
IPC 7 G01F B01L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 98 03841 A (SCEPTER SCIENT INC) 29 January 1998 (1998-01-29) page 3, line 3 -page 4, line 8; figures 1-3	1-11
A	WO 96 24030 A (ABBOTT LAB) 8 August 1996 (1996-08-08) cited in the application page 5, line 29 -page 15, line 27; figures 1-8	1-11
A	US 5 863 708 A (CHERUKURI SATYAM CHOUDARY ET AL) 26 January 1999 (1999-01-26) column 7, line 37 -column 8, line 26; figure 4	1

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

° Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&" document member of the same patent family

Date of the actual completion of the international search

6 September 2000

Date of mailing of the international search report

14/09/2000

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/ISA/210 00/00371

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE 196 46 505 A (ITT IND GMBH DEUTSCHE) 14 May 1998 (1998-05-14) column 4, line 27 -column 5, line 7; figure 1 ---	1
A	EP 0 819 942 A (BOEHRINGER MANNHEIM GMBH ;HITACHI LTD (JP)) 21 January 1998 (1998-01-21) column 9, line 42 -column 10, line 53; figures 3,4 -----	1

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PC 00/00371

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